

REMARKS

Claim 69 remains in the application. Claims 1-60 and 63-65 were previously canceled without prejudice to further prosecution in order to expedite prosecution of the remaining claims. Claims 61, 62, and 66-68 are hereby canceled without prejudice to further prosecution in order to expedite prosecution of the remaining claims. Claim 69 was previously amended.

Claim Rejection--35 USC 103

Claims 69 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Takagi in view of Ose. Applicants respectfully traverse this rejection.

Claim 69, as previously presented, recites as follows.

69. A method of imaging a substrate in a dual-beam secondary electron emission microscope by detecting both secondary and reflected electrons, comprising:
- a) exposing said substrate to a dual beam comprising an influx of relatively high-energy electrons, said high-energy electrons having an energy selected to cause secondary electrons to leave said substrate, and an influx of relatively low-energy electrons, said electrons having a sufficiently low energy so that a substantial portion of said electrons are reflected from a surface of said substrate and both an energy and a current density profile selected to maintain surface charge present on said substrate at a predetermined level, wherein said influxes of high-energy and low-energy electrons are provided at a same time in said dual beam,
 - b) **filtering** said secondary electrons and the portion of said relatively low-energy electrons which are reflected from the surface of said substrate, in order to select most or all of said secondary electrons which are emitted at angles other than perpendicular to the substrate and most or all of said reflected electrons which are scattered away from the specular angle, and **to reject** most or all of said **secondary electrons** which are emitted at an **angle perpendicular** to the substrate **and** most or all of said **reflected electrons** which are scattered at the **specular angle**,
 - c) focusing said selected secondary electrons and said selected reflected electrons to create an image of said substrate in a plane of a detector, and
 - d) detecting said selected secondary electrons and selected reflected electrons, thereby imaging a portion of said substrate.

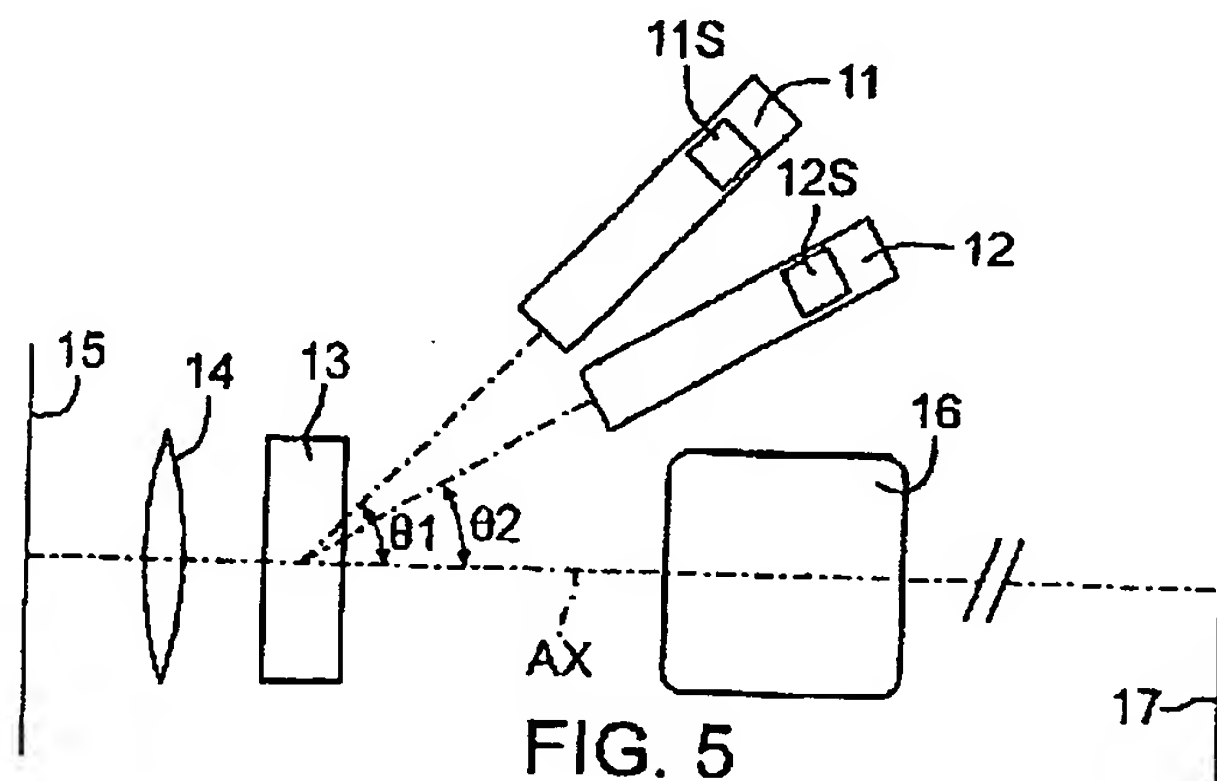
(Emphasis added.)

As recited explicitly in claim 69, **filtering** is used to **reject** (a) most or all of the **secondary electrons** which are emitted at an **angle perpendicular** to the substrate **and** (b) most or all of said **reflected electrons** which are scattered at the **specular angle**. This filtering advantageously enables the creation of a “dark field” type image which includes neither the perpendicularly-emitted secondary electrons nor the specularly-scattered reflected electrons. Applicants respectfully submit that this limitation of claim 69 is neither disclosed nor suggested by the cited references.

Takagi Reference

Regarding Takagi, applicants respectfully submit that the Takagi reference does not disclose or suggest the above limitation. Takagi does not disclose or suggest either “filtering ... to **reject** most or all of the **secondary electrons** which are emitted at an **angle perpendicular** to the substrate” or “filtering ... to **reject** ... most or all of said **reflected electrons** which are scattered at the **specular angle**.”

The Wien filter 13 in Takagi is described as being configured to produce a magnetic field “fulfilling a Wien condition with respect to secondary electrons accelerated from the specimen surface.” (Takagi, column 3, lines 63-65.) When such a Wien condition is fulfilled, the **secondary electrons** would travel at a **perpendicular angle** from the surface 15 and through the Wien filter 13 along the optical axis towards the projection-optical system 16. See FIG. 5 of Takagi, reproduced below for convenience.



In other words, Takagi discloses setting up the Wien filter 13 such that the perpendicularly-emitted secondary electrons are **detected** by the projection system 16. In direct contrast, claim 66 requires “filtering ... to **reject** most or all of said secondary electrons which are emitted at an angle perpendicular to the substrate.” (Emphasis added.) This rejection of perpendicularly-emitted secondary electrons per the claimed invention is opposite to the disclosed detection of secondary electrons per Takagi.

Similarly, if the Wien filter 13 of Takagi were to be adjusted so as to fulfill a Wien condition with respect to the **reflected electrons** accelerated from the surface 15, then the reflected electrons would also travel at a perpendicular angle from the surface 15 and through the Wien filter 13 along the optical axis towards the projection system 16. Here, since the specular angle is the same as the perpendicular angle in the configuration of FIG. 5, such an adjustment to the Wien filter 13 would result in the specularly-scattered reflected electrons being **detected** by the projection system 16 of Takagi, rather than being **rejected** per the claim limitation.

Ose Reference

Regarding Ose, applicants respectfully submit that the Ose reference also does not disclose or suggest the above limitation. Ose does not disclose or suggest either “filtering ... to **reject** most or all of the **secondary electrons** which are emitted at an **angle perpendicular** to the substrate” or “filtering ... to **reject** ... most or all of said **reflected electrons** which are scattered at the **specular angle**.”

Consider FIG. 1 of Ose, reproduced below for convenience.

angle.” (Emphasis added.) This rejection of specularly-scattered reflected electrons is opposite to the disclosed detection of specularly-scattered reflected electrons in Ose.

Regarding filtering of the secondary electrons, Ose merely discloses an energy filter 60 which may be used to prevent the secondary electrons, regardless of emission angle, from reaching the conversion electrode 16. The energy filter 60 does not selectively reject perpendicularly emitted secondary electrons.

For the above-discussed reasons, applicant respectfully submits that claim 69, as amended, is patentably distinguished over Takagi in view of Ose.

Conclusion

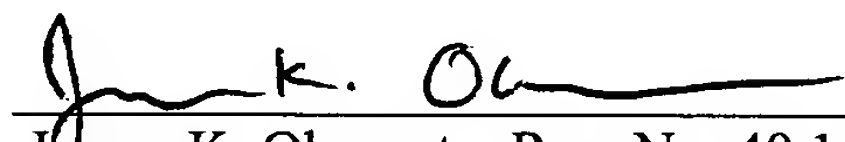
For the above-discussed reasons, applicants believe that remaining claim 69 is patentably distinguished over the cited art. Favorable action is respectfully requested.

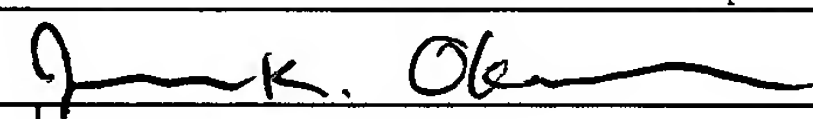
The examiner is also invited to call the below-referenced attorney to discuss this case.

Respectfully Submitted,

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Dated: June 30, 2005


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